

BULLETIN

OF THE INSTITUTE OF METALS

VOLUME 2

JANUARY 1955

PART 17

INSTITUTE NEWS

Spring Meeting, London, 29 March to 1 April 1955

As previously announced, the 1955 Spring Meeting will be held in London from Tuesday, 29 March, to Friday, 1 April, inclusive. Apart from the May Lecture, to be delivered at the Royal Institution, the scientific and technical sessions will be held at Church House, Great Smith Street, Westminster, S.W.1.

A very interesting programme has been arranged for this meeting, which the Council hopes will be largely attended by members and guests. Visitors will be welcome at the May

Lecture and at the scientific sessions; tickets of admission are not required.

It is particularly hoped that members will give their support to the Annual Dinner and Dance, at Grosvenor House. A similar function held in 1954 was a great success.

All members resident in Europe will receive, separately, a Reply Form for completion in connection with this meeting. Others, resident outside Europe, who intend to be present are asked to apply for a Reply Form. For programme, see p. 204.

NEW YEAR MESSAGE FROM THE PRESIDENT

The New Year brings favourable prospects of sustained progress in many fields of activity with which the members of this Institute are associated, and it is my sincere wish that in the coming year all of you may share in some measure in the benefits of this progress and also find satisfaction in added happiness and friendship.

S. J. Dorey.

INSTITUTE NEWS

PROGRAMME

Tuesday, 29 March

Location : Royal Institution, Albemarle Street, W.1.

7.0 p.m. May Lecture.

8.30 for 8.45 p.m. Council Dinner in honour of the May Lecturer.

Wednesday, 30 March

Location : Church House, Great Smith Street, S.W.1 (Bishop Partridge Hall).

10.0 a.m. Annual General Meeting :

Report of Election of Officers for 1955-56.

Report of Council for the Year ended 31 December 1954.

Report of the Honorary Treasurer for the Financial Year ended 30 June 1954.

Installation of the New President, Dr. MAURICE COOK, F.I.M.

Presentation of Institute Medals and Students' Essay Prizes.

Presidential Address, by Dr. MAURICE COOK, F.I.M.

12.0 noon. Adjournment.

PROGRAMME "A"

Location : Church House, Great Smith Street, S.W.1 (Convocation Hall).

2.30 p.m. Theme : Refractories for Low-Frequency Induction Furnaces. A discussion, based on the following two papers to be published in the February Journal :

"The Use of Refractories in Low-Frequency Induction Furnaces for Melting Copper Alloys", by Maurice Cook, C. L. M. Cowley, and E. R. Broadfield.

"The Choice and Construction of Monolithic Linings for Twin-Bath Induction Furnaces for Melting Aluminium Alloys", by E. J. Thackwell.

4.30 p.m. Session concluded.

PROGRAMME "B"

Location : Church House, Great Smith Street, S.W.1 (Bishop Partridge Hall).

2.30 p.m. Theme : Fatigue. A discussion based on the following papers published in the Journal, which will be introduced by a Rapporteur :

"Some Further Observations on the Fatigue Process in Pure Aluminium", by P. J. E. Forsyth (Serial No. 1538; May 1954).

"Fatigue Phenomena in High-Strength Aluminium Alloys", by R. F. Hanstock (Serial No. 1559; Sept. 1954).

"The Creep and Fatigue Properties of Some Wrought Complex Aluminium Bronzes", by J. McKeown, D. N. Mends, E. S. Bale, and A. D. Michael (Serial No. 1569; Nov. 1954).

"The Influence of Sub-Structure on the Slip Observed in Pure Aluminium and Aluminium Alloys When Subjected to Fatigue Stress", by P. J. E. Forsyth and C. A. Stubbington (Serial No. 1583; Jan. 1955).

"The Effect of Internal Oxidation on the Fatigue Properties of Copper Alloys", by J. W. Martin and G. C. Smith (Serial No. 1580; Jan. 1955).

4.30 p.m. Session concluded.

Location : 4 Grosvenor Gardens, S.W.1.

8 p.m. to 11 p.m. Informal Conversazione and Exhibition. Dress: Lounge suits. Tickets, price 4s. each, inclusive of light refreshments.

Thursday, 31 March

PROGRAMME "A"

Location : Church House, Great Smith Street, S.W.1 (Hoare Memorial Hall).

10.0 a.m. Symposium on "The Control of Quality in the Production of Wrought Non-Ferrous Metals and Alloys." Part III.—"The Control of Quality in Heat-Treatment and Final Operations", based on the following papers to be published in the February, 1955, issue of the Journal. The papers will be introduced by a Rapporteur.

"The Control of Quality in Heat-Treatment and Final Operations in the Production of Rolled, Extruded, and Drawn Aluminium and Aluminium Alloys", by A. J. Field and J. Salter.

"Heat-Treatment and Finishing Operations in the Production of Copper and Aluminium Rod and Wire", by H. J. Miller.

"The Control of Quality in the Heat-Treatment and Finishing of Copper and Copper-Base Alloys", by V. B. Hywel and T. W. Collier.

"The Heat-Treatment, Inspection, and Testing of Wrought Nickel and Nickel Alloys", by W. Betteridge and T. E. Cound.

"The Production of Light-Alloy Drop-Forgings, Their Heat-Treatment, Inspection, and Testing", by W. T. Edmunds and R. C. Lloyd.

12.45 p.m. Adjournment of Symposium.

PROGRAMME "B"

Location : Church House, Great Smith Street, S.W.1 (Bishop Partridge Hall).

10.0 a.m. Theme : The Constitution of Uranium Alloys. A discussion based on the following papers published, or to be published, in the Journal. The papers will be introduced by a Rapporteur.

"A Survey of the Uranium-Nickel System", by J. D. Grogan and R. J. Pleasance. With an Appendix on "An X-Ray Examination of Some Uranium-Nickel Alloys", by B. E. Williams (Serial No. 1506; Nov. 1953).

"The System Uranium-Lead", by B. R. T. Frost and J. T. Maskrey (Serial No. 1511; Dec. 1953).

"The System Uranium-Mercury", by B. R. T. Frost (Serial No. 1539; May 1954).

"The Constitution of Uranium-Zirconium Alloys", by D. Summers-Smith (Feb. 1955).

"Pseudo-Binary Sections Between Laves Phases in Ternary Alloys of Uranium", by G. B. Brook, G. I. Williams, and (Mrs.) E. M. Smith (Feb. 1955).

12.45 p.m. Adjournment.

INSTITUTE NEWS

PROGRAMME "A"

Location : Church House, Great Smith Street, S.W.1 (Hoare Memorial Hall).

2.30 p.m. *Symposium on "The Control of Quality in the Production of Wrought Non-Ferrous Metals and Alloys". Part III.—"The Control of Quality in Heat-Treatment and Final Operations", continued.*

4.30 p.m. Session concluded.

PROGRAMME "B"

Location : Church House, Great Smith Street, S.W.1 (Bishop Partridge Hall).

2.30 p.m. (a) *Theme : Twinning.* A discussion based on the following papers published in the *Journal* :

"The Formation and Removal of Twins in Titanium During Deformation", by A. T. Churchman (Serial No. 1562; Sept. 1954).

"Growth Twins in Crystals of Low Co-ordination Number", by E. Billig (Serial No. 1565; Oct. 1954).

"Twinning and Untwinning in Polycrystalline Magnesium", by R. L. Woolley (Serial No. 1566; Oct. 1954).

3.30 p.m. (b) *Theme : Deformation and Fracture of Zinc.* A discussion, based on the following papers published in the *Journal* :

"Some Observations on the Deformation of Zinc at High Temperatures", by R. W. Cahn, I. J. Bear, and R. L. Bell (Serial No. 1544; June 1954).

"The Cleavage Fracture of Pure Polycrystalline Zinc in Tension", by G. W. Greenwood and A. G. Quarrell (Serial No. 1554; Aug. 1954).

4.30 p.m. Session concluded.

Location : Grosvenor House, Park Lane, W.1.

Evening. DINNER AND DANCE. Dress: Evening dress, or uniform, with decorations. Tickets, price 36s., including coffee. Dancing until 1 a.m. to Sidney Lipton's Band. Tables can be booked for private parties of 6, 8, or 10 (or larger, by special arrangement); otherwise members and their guests will be seated with their friends so far as is practicable.

Friday, 1 April

All-day visits for Members and Male Guests, to one of the following series. The number of members and guests who can be accepted on each of these visits is limited. Transport starting point and times of departure will be stated on the tickets, prices of which are quoted below.

(1) *Morning : W. H. A. Robertson and Co., Ltd., Bedford (rolling mill and wire- and tube-machinery manufacturers). Afternoon : W. H. Allen and Co., Ltd., Bedford (mechanical, electrical, and hydraulic engineers). Lunch by invitation of the Directors of W. H. A. Robertson and Co., Ltd. Maximum 30.*

(2) *Morning : K. and L. Steelfounders and Engineers, Ltd., Letchworth. Afternoon : either (a) Foster Instrument Co., Ltd., Letchworth (temperature measuring and recording instruments, &c.) or (b) Wild-Barfield Electric Furnaces, Ltd., Watford (laboratory and full-scale production electric resistance furnaces; heating elements and other*

details for G. W. B. Electric Furnaces, Ltd.; and induction heating equipments). Lunch by invitation of the Directors of K. and L. Steelfounders and Engineers, Ltd. Maximum 30.

(3) *Morning : G. A. Harvey and Co. (London), Ltd., London, S.E.7 (Engineers, metal perforators, sheet-metal workers, tank makers, &c.). Maximum 20.*

(4) *Morning : Vauxhall Motors Ltd., Luton. Lunch by invitation of the Company. Maximum 30.*

Awards of Institute Medals

The Council has resolved to make the following awards of medals, which will be presented by the President at the Annual General Meeting at Church House, Great Smith Street, Westminster, S.W.1, in the morning of Wednesday, 30 March 1955:

(a) *The Institute of Metals (Platinum) Medal for 1955* to Dr. COLIN JAMES SMITHILLS, M.C., F.I.M., Director of Research, The British Aluminium Co., Ltd., in recognition of his services to metallurgical science, to the metal industries, and to the metallurgical profession.

(b) *The Rosenhain Medal for 1955* to Dr. WILLIAM ALBERT BAUER, F.I.M., Research Manager, The British Non-Ferrous Metals Research Association, in recognition of his outstanding contributions to knowledge in the field of physical metallurgy, with special reference to the influence of gases and shrinkage on the soundness of cast metals.

(c) *The W. H. A. Robertson Medal and Premium of Fifty Guineas for 1954* to Professor HUGH FORD, D.Sc., Ph.D., Wh.Sch., M.I.Mech.E., and Mr. J. G. WISTREICH, M.Sc., D.I.C., A.M.I.Mech.E., for their paper on "Problems of the Control of Dimension, Shape, and Finish in the Rolling of Sheet and Strip and in the Drawing of Wire" (*Journal*, 1954, March).

1954 Autumn Meeting in Switzerland

All those who were able to participate in it were agreed that the 1954 Autumn Meeting in Switzerland was one of the most successful the Institute has ever had.

The meeting was held by invitation of the Verein Schweiz. Maschinen-Industrieller and the Schweiz. Verband fur die Materialprüfungen der Technik, to the members of which the Institute is greatly indebted for the most generous hospitality offered to those taking part. The Institute's thanks are also warmly expressed to the members of the Reception Committee (Professor Dr. A. von Zeerleder, Professor Dr. E. Brandenberger, and Dr. O. H. C. Messner), and in particular to Mr. W. von Orelli, the Honorary Secretary to the Reception Committee, who so carefully planned the arrangements for the meeting.

The Council also desires to record its thanks to the Directors of the numerous works and laboratories visited, both for their invitations and for the hospitality offered to members on such a generous scale. Members were deeply impressed with all that they were shown.

Members much appreciated the interest taken in the meeting by the Lord Mayor of Zürich (Dr. P. Meierhans), who not only attended the Banquet and other functions in connection with the meeting, but also gave instructions for the City to be illuminated in honour of the Institute on the last day of the members' stay in Zürich.

Some photographs taken at the meeting are printed on pp. 206 and 207.

AUTUMN MEETING IN SWITZERLAND



Dr.h.c. E. Speiser, President of the Verein Schweiz. Maschinen-Industrieller, and a Director of the Aktiengesellschaft Brown Boveri, Baden, speaking at the Banquet at the Grand Hotel Dolder, Zürich. Left to right: Professor Dr. A. von Zeerleder (Honorary Corresponding Member to the Council for Switzerland); Dr. S. F. Dorey (President); Dr. Speiser, Dr. P. Meierhans (Lord Mayor of Zürich); Frau Masing; and Professor Dr. G. Masing (Institute of Metals (Platinum) Medallist).



Banquet at the Grand Hotel Dolder, Zürich, given for members of the Institute by the Verein Schweiz. Maschinen-Industrieller and the Schweiz. Verband für die Materialprüfungen der Technik.

AUTUMN MEETING IN SWITZERLAND



Mr. W. von Orelli (Honorary Secretary to the Reception Committee) and ladies outside the Kongresshaus, Zürich.

Señora and Señor Torras Serrataco (Member), from Madrid.



Left to right: Professor Dr. A. von Zeerleder (Chairman of the Reception Committee), Dr. S. F. Dorey (President), Professor Dr. E. Brandenberger (Member of the Reception Committee), and Dr. K. Schmid (Rector of the Eidgenössische Technische Hochschule, Zürich).

INSTITUTE NEWS

Joint Metallurgical Societies' Meeting in Europe, 1955

An important meeting on the scientific, metallurgical, and production problems of the ferrous and non-ferrous metals industries will be held in Europe on 1-18 June 1955. The meeting will be joint between the American Institute of Mining and Metallurgical Engineers, the American Society for Metals, and leading metallurgical societies in Great Britain, Germany, Belgium, and France, of which the Institute of Metals is one.

Its objects are to establish personal contacts between experts in the U.S.A. and in Europe, to provide opportunities for scientific and technical discussion, to enable visitors from the U.S.A. to see something of the metallurgical industries of Europe and to visit places of historical and other interest, and to foster better understanding and co-operation among all concerned.

The scope of the meeting will cover ironmaking (including coke and ore preparation); steelmaking; mechanical working and heat-treatment, both ferrous and non-ferrous (including hot and cold rolling, forging, wire-drawing, and continuous casting, but not the foundry industry); refining and fabrication of non-ferrous metals; surface treatment (including finishing and coating); metallurgical education and training in industry; metallurgical research.

Patron

His Royal Highness The Duke of Edinburgh, K.G., has graciously consented to be Patron of the Meeting in Great Britain.

Summary of the Programme

The first section, in London and Great Britain (1-7 June), will be organized by the Iron and Steel Institute and the Institute of Metals. Meetings in London from 1-3 June will be followed by five tours to industrial districts: (i) South Wales, (ii) Birmingham, (iii) Sheffield, (iv) North East Coast, (v) Scotland.

The second section, in Düsseldorf, Germany (9-12 June), will be organized by the Verein deutscher Eisenhüttenleute and the Deutsche Gesellschaft für Metallkunde, in conjunction with the Gesellschaft deutscher Metallhütten und Bergleute.

The third section will consist of a one-day visit on 13 June to Liège, Belgium, organized by the Centre National de Recherches Métallurgiques.

The fourth session, in Paris and France (14-18 June), will be organized by the Société Française de Métallurgie.

Post-Meeting Tours

After the main meeting in Great Britain, Germany, Belgium, and France, tours will be organized to meet individual requirements in other countries, including Austria (by invitation of the Eisenhütte Oesterreich), Italy (by invitation of the Associazione Italiana di Metallurgia), Spain (by invitation of the Instituto del Hierro y del Acero), and Switzerland.

Technical Discussions

A Plenary Session will be held in each country, but most of the technical and scientific work will be conducted by means of discussion groups. The European Societies will appoint Group Leaders who are recognized authorities to guide the discussion on each subject, and will ensure that leading experts are available to take part in the discussions. A list of the subjects selected for discussion in each country will be issued later.

Participation by Members of the Institute

Visits to works and some of the social functions are by invitation, and numbers will unavoidably be restricted because of limitations of accommodation. The arrangements for Members of both Institutes to take part in technical meetings will be announced later.

Travel Agents and Managers of the Meeting in Europe

Messrs. Thos. Cook and Son, Ltd., have been appointed Travel Agents and Managers of the Meeting in Europe. By arrangement with the American Joint Committee, they will also handle transatlantic travel when required and will be responsible for issuing the programmes.

Secretariat and Enquiries

In the U.S.A. enquiries may be directed to Thos. Cook and Son, Inc., 587 Fifth Avenue, New York, N.Y., from whom Application Forms for participation in the meeting may be obtained. In Europe, information about details of arrangements in each country is obtainable from the Secretaries of the participating societies, including the Institute of Metals.

The Secretary of the Institute of Metals is Joint Honorary Secretary for the United Kingdom. The Honorary General Secretary of the European Committee is Mr. K. Headlam-Morley, Secretary of The Iron and Steel Institute, 4 Grosvenor Gardens, London, S.W.1.

Election of Members

The following 11 Ordinary Members, 1 Junior Member, and 14 Student Members were elected on 25 November 1954:

As Ordinary Members

BANKS, Allan Pearson, L.I.M., Chief Metallurgist, Distington Engineering Co., Ltd., Workington, Cumberland.
BROWN, Henry, Ph.D., Director, The Udylite Research Corp., 21441 Hoover Road, Van Dyke, Mich., U.S.A.
CHITTENDEN, William, Assistant Supervisor, The Bristol Brass Corp., 580 Broad Street, Bristol, Conn., U.S.A.
FULLER, William Edward, Information Officer, British Steel Castings Research Association, Broomgrove Lodge, Broomgrove Road, Sheffield 10.
HICKLEY, (Mrs.) Cecilia Margaretha, Ph.D., Dipl.Ing., Technical Officer, Research Department, Imperial Chemical Industries, Ltd., Metals Division, Kynoch Works, Witton, Birmingham 6.
McCULLOCH, Alfred, M.E., A.M.I.E.E., A.M.I.E. (Aust.), Chief Engineer, The Southern Electric Authority of Queensland, 156 Boundary Street, Brisbane, Queensland, Australia.
MOLLAND, Peter Alfred, Partner, Davidson and Pearson, 20 Grosvenor Gardens, London, S.W.1.
MORTON, Peter Harlow, B.A., M.S., Ph.D., Technical Officer, Imperial Chemical Industries, Ltd., Metals Division, Kynoch Works, Witton, Birmingham 6.
REIMANN, Max, Technical Sales Representative, Northern Aluminium Co., Ltd., Bush House, Aldwych, London, W.C.2.
SMITH, Eric George, M.C., M.A., Assistant to Works Director, Northern Aluminium Co., Ltd., Bush House, Aldwych, London, W.C.2.
TAUB, Ariel, M.Sc., Lecturer in Metallurgy, The Israel Institute of Technology, Haifa, Israel.

PERSONAL NOTES

As Junior Member

SASTRY, Bhamidipati Ganapathy, B.Sc., Foreman, Technical Development Establishment (Metallurgy), c/o Ordnance Factory, Katni (Mahhya Pradesh), India.

As Student Members

CONGLETON, John, Undergraduate, Metallurgy Department, King's College, University of Durham, Newcastle-upon-Tyne.

DOLDON, Raymond, Undergraduate, Metallurgy Department, University of Sheffield.

HENDERSON, Leslie, Undergraduate, Metallurgy Department, King's College, University of Durham, Newcastle-upon-Tyne.

HUANG, Shaochi, B.S. (Phys.), M.S. (Met. Eng.), Graduate Student, Department of Metallurgical Engineering, Illinois Institute of Technology, Chicago 16, Ill., U.S.A.

HUDSON, William John, Student, Royal School of Mines, London, S.W.7.

MACFARLANE, William, Jr., Student, Department of Metallurgy, Royal Technical College, George Street, Glasgow, C.I.

MARSHALL, David R., Undergraduate, Metallurgy Department, University of Sheffield.

MISTRY, Hosang Jehangir, B.Sc., Student of Metallurgy, College of Technology, Manchester.

PARKER, Raymond, Metallurgical Laboratory Assistant, County Technical College, Kendrick Street, Wednesbury, Staffs.

PARRY, Gareth Wyn, Undergraduate, Metallurgy Department, University College, Swansea.

RAMSTAD, Herman Foss, Student, Royal School of Mines, London, S.W.7.

ROBERTS, David Anthony, Undergraduate, Metallurgy Department, University College, Swansea.

ROY, Amedee, Jr., B.A.Sc., M.S., Graduate Student, Illinois Institute of Technology, Chicago 16, Ill., U.S.A.

TONER, Daniel F., B.S., Research Assistant, Department of Mining and Metallurgy, University of Wisconsin, Madison 6, Wis., U.S.A.

PERSONAL NOTES

MR. D. W. ALDRIDGE has been appointed Deputy Chairman of British Insulated Callender's Cables, Ltd.

MR. T. R. ANANTHARAMAN, having completed his stay at Oxford as Rhodes Scholar from India, and having been awarded the degree of D.Phil., has taken a post as Research Assistant at the Max-Planck-Institut für Metallforschung, Stuttgart.

COLONEL N. T. BELAIEW has recently been made an Honorary Member of the Société Française de Métallurgie. He has been a member of the Institute of Metals since 1912 and was for a number of years Honorary Corresponding Member to the Council for Russia.

MR. R. G. BELLAMY has joined the Development Department of the National Smelting Co., Ltd., Avonmouth.

MR. B. O. BENNETT has resigned his post with Messrs. Riley, Harbord, and Law and taken up an appointment with the Ministry of Supply at the Royal Arsenal, Woolwich.

MR. W. F. BRAZENER has been elected a Vice-President of the British Non-Ferrous Metals Research Association.

DR. J. M. BUTLER has left the British Non-Ferrous Metals Research Association to become Senior Metallurgist to McKechnie Bros., Ltd., Birmingham.

PROFESSOR G. CHAUDRON has been elected a member of Academie des Sciences.

DR. M. G. COCKCROFT has resigned his I.C.I. Fellowship on being appointed a lecturer in Industrial Metallurgy at Birmingham University.

DR. C. L. M. COTTRELL has been awarded the Sir William J. Larke Medal for 1954 by the Institute of Welding, for his paper entitled "Hydrogen—Barrier to Welding Progress?"

MR. W. L. FINLAY, Research Manager to Rem-Cru Titanium, Inc., Midland, Pa., has been appointed a Vice-President of the Company.

MR. D. JOHNSTON has been appointed Head of the Metallurgy Department at the County Technical College, Wednesbury.

DR. R. KISSLING is now Head of the Metallurgical Department, Aktienbolaget Atomenergi, Stockholm 9.

DR. G. LUCAS has left King's College, University of Durham, and is now at the Brown-Firth Research Laboratories, Sheffield.

MR. H. F. MATON has relinquished his post of Chief Mechanical Engineer to Johnson, Matthey and Co., Ltd., on his appointment as General Manager of their subsidiary, The Harlow Metal Co., Ltd., Harlow, Essex.

PROFESSOR DOTT. L. MATTEOLI, Honorary Corresponding Member to the Council for Italy, has taken up an appointment at the Centro di Ricerche Metallurgiche, Turin.

MR. K. E. G. MEREDITH has left the Northern Aluminium Co., Ltd., to become an Experimental Officer in the Metallurgy Division of the Atomic Energy Research Establishment, Harwell.

MR. W. A. C. NEWMAN has retired from his position as Chemist and Assayer at the Royal Mint and has joined Messrs. Riley, Harbord, and Law as a consultant. He had been in the service of the Royal Mint for 42 years.

DR. J. D. NODEN has left the U.K. Atomic Energy Authority and is now with The Mond Nickel Co., Ltd., Birmingham.

MR. J. E. ROBERTS has left the British Welding Research Association and joined the Research Department of Colville's, Ltd., Motherwell.

MR. J. A. SABATO has resigned his post with Guillermo Decker SA. and become Director of a new metallurgical research institute, Investigaciones Metalúrgicas, Nahuel Huapí 2251, Buenos Aires.

MR. P. T. SKEGGS has been appointed Senior Inspection Officer for the South Eastern Area of the Aeronautical Inspection Directorate, Ministry of Supply.

DR. C. J. SMITHILLS has been elected a Vice-President of the British Non-Ferrous Metals Research Association.

MR. J. TAYLOR has been appointed Assistant Works Manager of W. H. Moore and Sons, Ltd., Birmingham.

DR. H. E. TUCHSCHMID has left Switzerland and is now engaged in the Metal Research Laboratory of the Case Institute of Technology, Cleveland, O.

NEWS OF KINDRED SOCIETIES

MR. A. H. WATERFIELD has ended his period of service as Scientific Attaché at the British Embassy in Paris and is now on the staff of the Department of Scientific and Industrial Research, 5-11 Regent Street, London, S.W.1.

MR. J. F. WATKINSON has taken up an appointment with the Ministry of Supply, Fighting Vehicle Design Dept., Chertsey, Surrey.

DR. J. H. WATSON has succeeded Mr. W. A. C. Newman as Chemist and Assayer at the Royal Mint, London.

MR. C. B. WRIGHT has resigned his post as Lecturer in Metallurgy at the Royal Naval College, Greenwich, and has been appointed a Lecturer in Physical Metallurgy at Birmingham University.

Deaths

The Editor regrets to announce the deaths of:

MR. JAMES STEVEN on 29 October 1954, in his 80th year. Mr. Steven, who was an Original Member of the Institute, was Chairman of Steven and Struthers, Ltd., Glasgow, and had been connected with the firm for over 60 years.

MR. OSWALD WRIGHT, Chief Chemist to D. Napier and Son, Ltd., Acton, on 1 December 1954, aged 61.

NEWS OF KINDRED SOCIETIES

Instituto del Hierro y del Acero

The Third General Assembly of the Instituto del Hierro y del Acero will take place from 20 June to 2 July 1955. The meeting will begin in Barcelona, so that those taking part may have an opportunity of visiting the International Industrial Fair which will then be in progress. Visits will subsequently be paid to a number of Spanish industrial centres, including Bilbao, San Sebastian, and Toledo, and the final sessions of the meeting will be held in Madrid.

A cordial invitation is extended to members of other metallurgical societies to participate in this meeting. Full details may be obtained from the offices of the Instituto, Villanueva 13, Madrid.

OTHER NEWS

International Conference on Aircraft Materials

An International Conference on Materials for Aircraft and Guided Missiles is being organized by the Association pour l'Encouragement à la Recherche Aéronautique and will take place from 28 March to 1 April 1955 at the Centre Marcellin Berthelot (Maison de la Chimie), 28 Rue Saint-Dominique, Paris (7e). In addition to a series of technical sessions covering all aspects of the subject, there will be an exhibition of aircraft materials and equipment. Details may be obtained from the A.E.R.A., 1 Rue de Courty, Paris (7e).

Physical Society Exhibition

The 1955 Physical Society Exhibition of scientific instruments and apparatus will be held on 25-28 April at the New Hall of the Royal Horticultural Society, Vincent Square, London, S.W.1. The change of venue from Imperial College will not alter the character and purpose of the Exhibition. A Handbook of the Exhibition will be available as usual.

Symposium on the Protection of Structural Steel

A symposium on "The Protection of Structural Steel," organized by the Corrosion Group of the Society of Chemical Industry, will be held in the lecture theatre of the Institution of Civil Engineers, Great George Street, London, S.W.1, on 31 March and 1 April 1955. The papers to be presented will include accounts of practical experience and of research into protective coatings, gathered from various countries. Non-members of the Corrosion Group who wish to receive a copy of the full notice of the meeting and registration form, when these are available, are invited to apply to the Hon. Secretary of the Group, Mr. S. C. Britton, The Tin Research Institute, Fraser Road, Greenford, Middlesex.

The Frederick Guthrie Society

The Frederick Guthrie Society was founded last year with the purpose of extending knowledge of the nature and uses of eutectic, hypo-eutectic, and hypereutectic mixtures, especially in alloys. The Society will hold meetings and will publish a journal, *Acta Eutectica*. The Society is an international one, and the address of the Secretary of the European section, Dr. H. Spengler, is Bönnigheimerstr. 69, Stuttgart-Zuffenhausen, Germany.

DIARY

The Institute

16 February. Informal Discussion on "The Treatment of Swarfs, Sawings, and Residues in the Non-Ferrous Metal Industries". (The University, Edgbaston, Birmingham 15, at 10.30 a.m.)

Local Sections and Associated Societies

17 January. **Sheffield Local Section.** "Metallurgical Research in the Electrical Industry", by Dr. Ivor Jenkins. (Joint Meeting with the Sheffield Metallurgical Association.) (University Buildings, St. George's Square, Sheffield, at 7.30 p.m.)

26 January. **Manchester Metallurgical Society.** "Cathodic Protection", by Dr. W. F. Higgins. (The Lecture Room, Central Library, Manchester, at 6.30 p.m.)

27 January. **Birmingham Local Section.** "Diffusion in Metals", by A. D. Le Claire. (James Watt Memorial Institute, Great Charles Street, Birmingham 3, at 6.30 p.m.)

27 January. **North East Metallurgical Society.** "The Manufacture and Properties of Some Heavy Forgings", by Dr. H. H. Burton. (Cleveland Scientific and Technical Institution, Middlesbrough, at 7.15 p.m.)

1 February. **Oxford Local Section.** "Deformation of Metals at High Rates of Strain", by Professor A. H. Cottrell. (Cadena Café, Cornmarket Street, Oxford, at 7.0 p.m.)

3 February. **Birmingham Local Section.** "The Effect of Trace Elements on the Properties of Iron and Steel", by Dr. N. P. Allen. (James Watt Memorial Institute, Great Charles Street, Birmingham 3, at 6.30 p.m.)

3 February. **London Local Section.** "Tin and Tin-plate", by Dr. W. E. Hoare. (4 Grosvenor Gardens, London, S.W.1, at 6.30 p.m.)

THE STRUCTURE OF METALS AND ALLOYS

REVISED EDITION

by W. HUME-ROTHERY and G. V. RAYNOR

Institute of Metals Monograph and Report Series No. 1.

Cloth, 370 pp. and 8 plates.

Price 35s. or \$5.50, post free. (Members, one copy at 17s. 6d. or \$3.00, post free.)

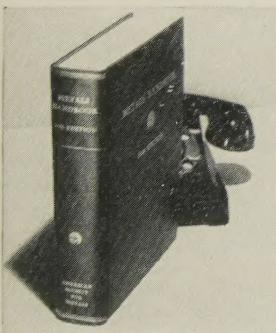
This well-known book by Dr. W. Hume-Rothery was first published in 1936, when it achieved an immediate success, and has since been reprinted seven times. Most of the principles outlined in 1936 have stood the test of time, but the tremendous output of research on the structure of metals and alloys has led to a demand for a thorough revision, and a new edition has now been written in collaboration with Professor G. V. Raynor.

The whole text has been revised and brought up to date, with considerable expansion of the parts dealing with solid solutions and intermediate phases in alloys. Completely new sections have been written on ternary alloys and on alloys of iron, whilst the part dealing with imperfections in crystals has been greatly extended and now includes a comprehensive account of the ideas of dislocation theory.

The description throughout has been kept at an elementary level, and can be understood without a knowledge of higher mathematics or of crystallographic notations. In this form the book should be invaluable to all those who, in the widest sense of the term, call themselves students of metallurgy, and it should also be of great value to physicists, chemists, and engineers.

Obtainable through booksellers or from :

THE INSTITUTE OF METALS, 4 GROSVENOR GARDENS, LONDON S.W.1



★ 1332 Large pages
1752 Illustrations
1057 Tables
803 Articles
1,620,000 Words
40,000 Copies in use

The METALS HANDBOOK

Here is a book without a competitor... a book 30 years in the making. The current, 7th edition of the Metals Handbook was compiled and written by 68 committees of the American Society for Metals; more than 500 metals engineers were hand-picked by the Society as the top experts, the men best qualified to write the most authoritative possible reference book on metals, metal properties, fabrication and uses. The book they wrote is the Metals Handbook. It is divided into 37 principal sections, and contains 803 separate articles and data sheets on metals, metal shaping, forming, heat treating, welding, machining, foundry work, cleaning, finishing, testing, inspection control and research techniques. All metals, all processes are included. The 64-page index and 4-page section on how to use the book make it easy for any reader to find what he wants. Over 40,000 copies of this edition are now in use by engineers, metallurgists, designers, production men, executives, purchasing agents and others. Order your copy of the 1948 edition today by returning the coupon below. The price is \$15.00.

American Society for Metals, Room 976
7326 Euclid Ave., Cleveland 3, Ohio

Please send me a copy of the Metals Handbook.

Name _____
Company _____
Address _____

Cheque or money order enclosed. Please send invoice.

THE HOT WORKING OF NON-FERROUS METALS AND ALLOYS

Cloth, 208 pp. and 23 plates, with numerous illustrations in the text.

Price 15s. or \$2.50, post free. (Members, one copy at 7s. 6d. or \$1.50.)

CONTENTS

The Hot Rolling of Aluminium and Its Alloys, by F. Kasz and P. C. Varley (The British Aluminium Co., Ltd.).

The Extrusion of Aluminium Alloys, by Christopher Smith (James Booth and Co., Ltd.).

The Hot Forging and Hot Stamping of Aluminium and Its Alloys, by F. E. Stokeld (The Deritend Stamping Co., Ltd.).

The Hot Working of Magnesium and Its Alloys, by R. G. Wilkinson (Magnesium Elektron, Ltd.) and F. A. Fox (H. J. Enthoven and Sons, Ltd.).

The Hot Working of Copper and Copper Alloys, by Maurice Cook and Edwin Davis (Imperial Chemical Industries, Ltd., Metals Division).

The Hot Working of Tin-Bronzes, by D. W. Dugard Showell (The Birmingham Battery and Metal Co., Ltd.).

The Hot Working of Lead and Lead-Rich Alloys, by L. H. Back (British Non-Ferrous Metals Research Association).

The Rolling of Zinc and Zinc-Rich Alloys, by C. W. Roberts and B. Walters (Imperial Smelting Corporation, Ltd.).

THE INSTITUTE OF METALS
4 Grosvenor Gardens · London, S.W.1

DIARY

- 8 February. South Wales Local Section. "Tool and Die Steels", by E. Johnson. (Metallurgy Department, University College, Singleton Park, Swansea, at 6.45 p.m.)
- 9 February. Manchester Metallurgical Society. "Industrial Applications of Precious Metals", by Dr. J. C. Chaston. (The Lecture Room, Central Library, Manchester, at 6.30 p.m.)
- 10 February. Liverpool Metallurgical Society. "Thermochemistry of Alloys", by Dr. A. R. Harding. (Liverpool Engineering Society, 9 The Temple, Dale Street, Liverpool, at 7.0 p.m.)
- 14 February. Scottish Local Section. "Some New Developments in Nickel Alloys", by A. B. Graham and C. C. Horne. (Institution of Engineers and Shipbuilders in Scotland, 39 Elmbank Crescent, Glasgow, C.2, at 6.30 p.m.)

Other Societies

- 18 January. Royal Aeronautical Society. "Manufacture of Integral Structures", by Dr. E. G. West. (The Library, Royal Aeronautical Society, 4 Hamilton Place, London, W.1, at 7.0 p.m.)
- 18 January. Society of Chemical Industry, Corrosion Group. "The Inhibition of the Attack of Metals by Acids", by Dr. T. P. Hoar. (Birmingham and Midland Institute, Paradise Street, Birmingham 1, at 6.30 p.m.)
- 20 January. Institution of Mining and Metallurgy. General Meeting. (Rooms of the Geological Society, Burlington House, Piccadilly, London, W.1, at 5.0 p.m.)
- 20 January. Society of Chemical Industry, Corrosion Group. Conversazione and Exhibition. The main theme of the Exhibition will be "Corrosion Prevention in the Home". (The Battersea Polytechnic, Battersea Park Road, London, S.W.11, at 6.30 p.m.)
- 31 January. Institution of Structural Engineers, Midland Counties Branch. "The Use of Light Alloys in Structures", by H. V. Hill. (James Watt Memorial Institute, Great Charles Street, Birmingham 3, at 6.0 p.m.)
- 1 February. Institution of Structural Engineers, Northern Ireland Branch. "Structural Uses of Aluminium," by D. V. Pike. (College of Technology, Belfast, at 6.45 p.m.)

APPOINTMENTS VACANT

AN EXPERIENCED METALLURGIST is required by English Electric, Rugby, to work with engineers and scientists on a new power-generation project. It is essential that applicants should have a good academic background and some years' experience of development work. Write, giving full details of age, education, and experience, quoting ref. 1367, to Dept. C.P.S., 336/7, Strand, London, W.C.2.

FULMER RESEARCH INSTITUTE requires graduate and non-graduate staff for research in physical metallurgy. Experience in general metallography, vacuum techniques, or the metallurgy of the more reactive and rare metals would be an advantage but is not essential. Salary according to qualifications and experience. Applications to The Director of Research, Fulmer Research Institute, Stoke Poges, Bucks.

METALLOGRAPHER with experience in the metallography of non-ferrous metals and alloys. Applicants should be capable of producing first-class preparations and able to explore new techniques for polishing, etching, and examination. Also **RESEARCH METALLURGIST** for work on new and rapidly developing bearing alloys. Applicants should be well qualified and have had some research experience. The positions are permanent and progressive and carry F.S.S.U. benefits. Full details, including age, experience, qualifications and salary required, to: The Tin Research Institute, Fraser Road, Perivale, Greenford, Mddx.

METALLURGICAL ENGINEER required for control and development work connected with casting and powder metallurgy. An applicant with experience of physical testing would be preferred. Applicants, who should be at least 25 years of age and of L.I.M. or A.I.M. standard, should apply to Box No. 380, The Institute of Metals, 4 Grosvenor Gardens, London, S.W.1.

MIDLANDS wrought light alloy manufacturers with a wide range of interests wish to engage two metallurgists for senior posts in an expanding laboratory. Candidates should be about 30 years of age and should possess a degree of similar qualifications with adequate experience either in research or production control. Write Labour Manager, James Booth & Co., Ltd., Argyle Street, Nechells, Birmingham 7.

PHYSICIST required for X-ray diffraction and other interesting physical investigations, in a Metallurgical Research Laboratory. Good prospects and scope exist. Pension scheme. Apply, giving full particulars of age, qualifications, and experience to Box No. 381, The Institute of Metals, 4 Grosvenor Gardens, London, S.W.1, quoting reference PX.

REQUIRED by well-known company in Buckinghamshire, competent metallographer, male or female, with experience in cooling curves, preparation of samples, all microscopic and photographic work. Able to prepare simple reports. Special experience in aluminium alloys and cast structures desirable, but not essential. Salary £400-£600 p.a., according to qualifications. Apply, stating age, experience, &c., to Box No. 382, The Institute of Metals, 4 Grosvenor Gardens, London, S.W.1.

THE QUASI-ARC CO., LTD., Bilston, Staffordshire, require qualified metallurgists, chemists, and physicists for work connected with the development of metal arc-welding electrodes in their new Research Laboratories. Salaries according to qualifications and experience.